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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/769,173

01/30/2004

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15415US01

7811

23446 7590 10/28/2008  
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EXAMINER

PALIWAL, YOGESH

ART UNIT

PAPER NUMBER

2435

MAIL DATE

DELIVERY MODE

10/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/769,173	<b>Applicant(s)</b> CHEN ET AL.	
	<b>Examiner</b> YOGESH PALIWAL	<b>Art Unit</b> 2435	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

- Applicant's submission for RCE filed on August 11, 2008 has been entered. Applicant has amended claims 1, 11, 21 and 32 and added. Currently claims 1-41 are pending in this application. Any well known art statements made in the prior office action not argued by applicant is taken as admittance of prior art as per MPEP 2144.03.

### ***Response to Arguments***

1. Applicant's arguments filed August 11, 2008 have been fully considered but they are not persuasive for the following reasons:

- Applicant argues that: "Examiner has equated Applicant's "secure key" to Akiyama's "work key", which is part of Akiyama's contract information. Furthermore, Akiyama discloses that a separate master key is used to encrypt the work key, as illustrated in FIG. 3 and further explained in paragraph 0100 of Akiyama. Obviously, the work keys are different from the master keys, which are used for encrypting the work keys. In this regard, Akiyama does not disclose that the work keys (equated by the Examiner to Applicant's "secure key") are encrypted utilizing a previously generated unreadable digitally signed encrypted work key. In other words, Akiyama does not disclose that the work keys are encrypted using previously generated work keys, as recited in Applicant's claim 1. Ellison does not overcome the above deficiencies of Akiyama."
- In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the work keys are encrypted using previously generated work keys") are not recited in the rejected

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claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Examiner would like to further point out that applicant is trying to force examiner to read the claim such that it would require a secure key and a key that encrypts secure key to be of same type. However, examiner is interpreting the current language of the claim such that as long as the key that encrypt the secure key is also a secure key it reads onto the claimed limitation. Since the master key of Akiyama is only provided to the subscriber through smart cards, the master key of Akiyama is in fact a "secure key". Therefore, the combination of Akiyama and Ellison still discloses all the limitations and the rejection is maintained. Note: examiner would like to further point out that the interpretation taken by applicant that claim require work key to be encrypted using previously generated work keys are not even supported by the specification. Throughout the specification, particularly page 5, lines 22-25 recites, " For example, in the CA system 100 illustrated in FIG. 1, the content scrambling key 118 is protected by the work key 122, which is in turn protected by the master key 126. This key protection "chain" is, sometimes, referred to as a key ladder". Further note that the invention is of a key ladder wherein lower level keys are encrypted using higher level keys. Nowhere in the specification it is recited that same level keys are encrypted using the same level keys as argued by the applicant. Also note that the current claim language does not raise rejection under U.S.C. 112 first paragraph for lacking the written description because at least one interpretation (one taken by the examiner) is supported by the specification.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama (US 2002/0001386) in view of Ellison (US 6,073,237), hereinafter Ellison.

Regarding **Claim 1**, Akiyama discloses a method for secure key authentication, the method comprising:

generating at a first location (Fig.29, This is a broadcast station where the contents, keys and digital signature for contact information etc, are generated and then sent to receivers) a digital signature (Fig. 5, "Digital signature") of a secure key to obtain a digitally signed secure key (Fig. 5, "work keys", also at paragraph 0107, "The digital signature is information used to check the authenticity of the contract information, and is used to prevent tampering.", also at paragraph 0107, "The contract information is made up of, e.g., a receiver ID, channel contract information, the number n of work keys, n pairs of work keys and work key identifiers, and digital signature").

encrypting the digitally signed secure key utilizing at least a previously generated unreadable secure key (Fig. 7, "Enciphered contract information", also at Paragraph 0106, lines 5-8, "The individual control packet is comprised of an information identifier, master key identifier, and encrypted contract information, as shown in FIG. 7.", Note: *[Each digitally signed contract information is encrypted using and master key, also note that master keys are generated and sent to clients via secure card therefore master keys are generated prior to encrypting work keys and it is also*

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*unreadable and also secure because only broadcaster and receivers have the master key (see Paragraph 0154)]*

and transmitting the digitally signed and encrypted secure key from the first location (Paragraph 0167, “The transmission processing operation of an individual control packet by the information distributor apparatus shown in FIG. 29...”). Note: individual control packets contains encrypted contract information (Paragraph 0106, “The individual control packet is comprised of an information identifier, master key identifier, and encrypted contract information, as shown in FIG. 7.”), and as established above, contract information contains work keys, as a result, when control packet is transmitted, it contains the signed work keys as well, and thus we can interpret that signed work keys are transmitted from a broadcast device depicted in Fig. 29).

Akiyama discloses encrypting work keys with master key. Akiyama does not disclose that the master key is also encrypted and digitally signed as now required by claim limitation.

However, using PKI system to encrypt and digitally signing the keys are well known technique in the art of cryptography, which enable secure transmission of keys over unsecured channels using asymmetric key encryption. Ellison, in the same field of endeavor of network security, discloses encrypting and digitally signing a key (Column 4, lines 64-67, “The session key  $K_x$  is signed by private key of the server itself  $K_n$  121 and encrypted by the public key of the user  $P1e$ . The encrypted and signed session key  $K_x$  is then sent back to the user 123).

Therefore, it would have been obvious at the time the invention was made to one of ordinary skill in the art to add, on the master key of Akiyama, a digital signature utilizing a private key of a broadcast station and then encrypt the digitally signed key with the public key of the receiver, as taught by Ellison. One of ordinary skill in the art would be motivated to do so because digital signature

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provides authentication and encryption provides secrecy. As a result, when the broadcast station updates the master key, it could utilize PKI technique to send new master key over an unsecured channel with fully confidentiality without having to provide each receiver a new smart card having a new master key.

Regarding **Claim 2**, the rejection of claim 1 is incorporated and further Akiyama discloses generating the digital signature from at least one of an asymmetric encryption algorithm and a symmetric encryption algorithm (Paragraph 0111, lines 9-10, “authenticates the digital signature using key information (secret key or public key) stored in a digital signature”)

Regarding **Claim 3**, the rejection of claim 1 is incorporated and the combination of Akiyama and Ellison discloses encrypting the digitally signed secure key prior to transmission utilizing at least an encrypted master key, to obtain the digitally signed and encrypted secure key (Fig. 7, “Enciphered contract information”, also at Paragraph 0106, lines 5-8, “The individual control packet is comprised of an information identifier, master key identifier, and encrypted contract information, as shown in FIG. 7.”) *[Each digitally signed contract information is encrypted using and master key, and Ellison discloses, as established in the rejection of claim 1 above, the limitation of encrypting a master key]*

Regarding **Claim 4**, the rejection of claim 3 is incorporated and further Akiyama discloses the secure key comprises at least one of a master key, a work key and a scrambling key. (*Fig. 5, “Work keys”*)

Regarding **Claim 5**, the rejection of claim 4 is incorporated and further Akiyama discloses the receiving the digitally signed and encrypted secure key at a second location (**Paragraph 0110, lines 1-2, “Upon receiving an individual packet via the public telephone network and modem 101...”**)

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decrypting the digitally signed and encrypted secure key to obtain a decrypted digitally signed secure key (Paragraph 0110, Lines 11-17, “If the master key identifier matches the master key, that master key is output from the master key storage 103 (step S4) to decrypt contract information in the individual information packet”)

Regarding **Claim 6**, the rejection of claim 5 is incorporated and further Akiyama discloses if the secure key comprises a work key then a decrypted digitally signed master key at the second location is utilized for decrypting an encrypted digitally signed work key (Paragraph 0110, Lines 11-17, “If the master key identifier matches the master key, that master key is output from the master key storage 103 (step S4) to decrypt contract information in the individual information packet (step S5). Work key information (pairs of work key identifiers and work keys and the like) contained in the decrypted contract information is stored in a work key storage 105”)

Regarding **Claim 7**, the rejection of claim 5 is incorporated and further Akiyama discloses if the secure key comprises a scrambling key then a decrypted digitally signed work key at the second location is utilized for decrypting an encrypted digitally signed scrambling key (Paragraph 0125, lines 9-14, “If the work key can be acquired, information of an encrypted section in the common control packet is decrypted using the work key (step S44). A channel key Kch is acquired from the decrypted information, and is stored in the channel key storage 118”)

Regarding **Claim 8**, the rejection of claim 5 is incorporated and further Akiyama discloses verifying authenticity of the digital signature of the digitally signed secure key (Paragraph 0112, line 1-2, “digital signature authentication process”)

Regarding **Claim 9**, the rejection of claim 8 is incorporated and further Akiyama discloses verifying the authenticity of the digital signature utilizing at least one of an asymmetric decryption



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algorithm and a symmetric decryption algorithm (Paragraph 0111, lines 7-11, “the contract information certifying device 107 certifies or authenticates the digital signature using key information (secret key or public key) stored in a digital signature authentication key storage 108”)

Regarding **Claim 10**, the rejection of claim 8 is incorporated and further Akiyama discloses determining whether to verify authenticity of the digital signature (Paragraph 0111, lines 6-8, “If the two IDs match, the contract information certifying device 107 certifies or authenticates the digital signature using key information”)

Claims **11, 21 and 32** are “computer program” and “system” claims analogous to “method” claim 1. Akiyama in the same reference discloses a system for performing method of claim 1 [Broadcast receiver is depicted in figure 1 and Transmitter system is depicted in figure 29]. Also, it should be noted that since Akiyama’s system discloses the hardware to perform the method of claim 1, therefore it would also have computer software that performs the method of claim 1. Claims 11, 21 and 32 are rejected under same rationale as the rejection of claim 1.

Claims **12, 22 and 33** are “computer program” and “system” claims analogous to “method” claim 2. Claims 12, 22 and 32 are rejected under same rationale as the rejection of claim 2.

Claims **13, 23 and 34** are “computer program” and “system” claims analogous to “method” claim 3. Claims 13, 23 and 34 are rejected under same rationale as the rejection of claim 3.

Claims **14, 24 and 35** are “computer program” and “system” claims analogous to “method” claim 4. Claims 14, 24 and 35 are rejected under same rationale as the rejection of claim 4.

Claims **15, 25 and 36** are “computer program” and “system” claims analogous to “method” claim 5. Claims 15, 25 and 36 are rejected under same rationale as the rejection of claim 5.

Claims **16, 26 and 37** are “computer program” and “system” claims analogous to “method” claim 6. Claims 16, 26 and 37 are rejected under same rationale as the rejection of claim 6.

Claims **17, 28 and 38** are “computer program” and “system” claims analogous to “method” claim 7. Claims 17, 28 and 38 are rejected under same rationale as the rejection of claim 7.

Claims **18, 28 and 39** are “computer program” and “system” claims analogous to “method” claim 8. Claims 18, 28 and 39 are rejected under same rationale as the rejection of claim 8.

Claims **19, 29 and 40** are “computer program” and “system” claims analogous to “method” claim 9. Claims 19, 29 and 40 are rejected under same rationale as the rejection of claim 9.

Claims **20, 30 and 41** are “computer program” and “system” claims analogous to “method” claim 10. Claims 20, 30 and 41 are rejected under same rationale as the rejection of claim 10.

Regarding **Claim 31**, rejection of claim 21 is incorporated and further Akiyama discloses at least one processor comprises at least one of a host processor, a microprocessor, and a microcontroller (Figure 29, processor used in the system of Fig. 29 is a host processor).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOGESH PALIWAL whose telephone number is (571)270-1807. The examiner can normally be reached on M-F: 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Kim Vu can be reached on (571) 272-3859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. P./

Examiner, Art Unit 2435

/Kimyen Vu/

Supervisory Patent Examiner, Art Unit 2431